STRATEGY RESEARCH PROJECT

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EFFECTS-BASED OPERATIONS: THE END OF DOMINANT MANEUVER?

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ABSTRACT

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This Strategic Research Paper investigates the theoretical and historical foundations of emerging effects-based operations concepts. Its goal is to determine the validity of such operations and the consequent implications for dominant ground maneuver. Many of the recent versions of effects-based operations argue that advances in stealth, precision engagement, and sensor technology have enabled strategic bombing to produce strategic decisions without dominant ground maneuver. The paper concludes that such thinking misreads a historical warfare lethality trend in a potentially dangerous effort to vindicate the Air Force doctrine of strategic attack. However, the ever-increasing precision and consequent lethality of all weapons will continue to impact ground maneuver, potentially allowing smaller ground force engagements and earlier exploitation of industrial age adversaries. Such a paradigm may well prove less effective at the lower end of the conflict spectrum where guerilla type forces do not present the physical targets for precision elements to attack. The paper also assesses effects-based thinking and contrasts tactical and strategic environments that might encompass such thinking. It concludes that the analytical nature of effects-based thinking is suitable for strategic decisionmaking, but less applicable at tactical levels where standard operating procedures and hard training are the true determinants of success.

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EFFECTS-BASED OPERATIONS: THE END OF DOMINANT MANEUVER?

> Airpower is an unusually seductive form of military strength because, like modern courtship, it appears to offer all the pleasures of gratification without the burdens of commitment. [1]
>
> —Eliot Cohen

To many senior leaders in the U. S. Army, the concept of effects-based operations is another attempt by strategic bombing advocates to line Air Force coffers at the expense of land forces. They see effects-based operations as old wine in new skins--catchy phrases with a technological twist to make air power "unusually seductive" to decision makers. Recent efforts by the Joint Advanced Warfighting Program at the Institute for Defense Analysis have "hijacked" the term by seeking to expand the original concept into the realm of strategic planning. This new version of effects-based operations represents an effort to anticipate intended and unintended effects, either to mitigate or exploit effects for advantage: an approach "that has been the foundation of a number of air, land and naval campaigns" throughout history.[2] Nevertheless, while adding to the intellectual debate, such an approach exacerbates the problem of understanding effects-based operations, since it suggests an almost universal applicability for the concept from strategic to tactical levels. However, like it or not, the concept of effects-based operations is gaining momentum and legitimacy. Joint Forces Command is presently developing a conceptual basis for effects-based operations as a precursor to future experimentation and potential inclusion in joint doctrine. [3] To that end, this paper will investigate effects-based operations from an Army perspective. It will examine the origins of effects-based operations, conduct a theoretical and historical assessment, and determine the concept's applicability to ground operations and dominant maneuver. Finally, the paper's goal is to see if effects-based operations can provide the strategic "gratification" air power enthusiasts so ardently advocate, as well as determine the implications for dominant ground maneuver.

THE ORIGINS OF EFFECTS BASED OPERATIONS

Air Force Colonel John Warden laid the intellectual foundation for effects-based operations with his depiction of the enemy as a system and future war as parallel warfare. In the early 1990s, Warden argued that technology would allow the United States to attack multiple, vital targets simultaneously at the strategic level, and thus collapse an adversary's system, leaving him with no means to respond. Warden contended that this "makes very real what Clausewitz called the ideal form of war." One can assume that Warden would argue that proper execution of parallel warfare would result in a near simultaneous capitulation as well.[4]

The genesis of Effects-Based Operations began with an analysis of the Gulf War air operations targeting, outlined in a monograph by then Brigadier General David A. Deptula, entitled Effects-*Based Operations: Change in the Nature of Warfare*. One of the leading planners in the famed "Black Hole" planning group for strategic targeting during the Gulf War, Deptula asserted that stealth technology and precision-guided munitions have ushered in a new form of warfare:

> War colleges teach two principal forms of warfare--attrition and annihilation. The Gulf War demonstrated another--control, through the application of parallel war. The strategies of annihilation and attrition rely on sequential, individual target destruction as the ultimate method of success and measure of progress--generally measured in terms of forces applied, or input. Using effects-based operations, the determinant of success is effective control of systems that the enemy relies upon to exert influence--output. Changing the way we think about the application of force may produce more effective use of force. . . . The combination of stealth and precision redefines the concept of mass. Mass, in the sense of an agglomeration of a large number of forces, is no longer required to achieve a devastating effect upon a system of forces, infrastructure, government, or industry. No longer do large numbers of surface forces require movement, positioning, and extensive preparation before we can achieve dominant effects on the enemy. . . . Surface forces will always be an essential part of the military, but massing surface forces to overwhelm an enemy is no longer an absolute prerequisite to impose control over the enemy.[5]

Under the moniker of effects-based operations, Deptula's argument took parallel warfare further. His notion was that it is the projection of force rather than the presence of force that achieves effects. In some circumstances the projection of force can replace deployed forces and achieve the same effect. [6] He clearly implies that technology has decreased the relevance and necessity for ground forces. In the end, one can assume he would advocate a reduction in the Army's budget to resource an expansion of Air Force stealth and precision capabilities.[7] While this is no doubt where the Army's "visceral hatred"[8] of effects-based operations arises, it reveals the core issue at hand: can effects-based operations, using stealth, precision, and parallel warfare, "compel the enemy to do our will?"[9] Do effects-based operations signal the end of dominant ground maneuver? Clausewitz would suggest that the answer lies in a theoretical assessment--one that casts aside the "visceral hatred" and objectively utilizes theory to "study the ways and means" of effects-based operations.[10]

EFFECTS-BASED OPERATIONS: A THEORETICAL ASSESSMENT

Among the first theorists on the use of air power was Guilio Douhet, who developed his theory against the backdrop of World War I's stalemate. Completing his work in 1921, Douhet's *Command of the Air*, argued for a number of simple and direct propositions:

> (1) Modern Warfare allows for no distinction between combatants and noncombatants; (2) successful offensives by surface forces are no longer possible; (3) the advantages of speed and elevation in the three-dimensional arena of aerial warfare have made it impossible to take defensive measures against an offensive aerial strategy; (4) therefore, a nation must be prepared at the outset to launch massive bombing attacks against the enemy centers of population, government, and industry--hit first and hit hard to shatter enemy civilian morale, leaving the enemy government no option but to sue for peace; (5) to do this an independent air force armed with long-range bombardment aircraft, maintained in a constant state of readiness, is the primary requirement.[11]

Billy Mitchell, an American airman in World War I, while adopting Douhet's strategic views, emphasized all forms of air power. In particular he argued that an air force's first task must be to defeat the enemy's air forces. He also strongly argued for the ability of air power to dominate ground and naval forces. To Mitchell, the overarching importance was not strategic bombing. Rather, it was "centralized coordination of all air assets under the control of an autonomous air force command, freed from its dependency on the army. If that goal could be achieved, he felt, everything else would fall into its proper place."[12]

These two theorists have had considerable impact: their strongly held beliefs in an independent air force under the command of an airman and their emphasis on strategic attacks that break the enemy's will to fight remain in current Air Force Doctrine.[13] They also form the starting blocks for effects-based operations, systems thinking, and parallel warfare. That their ideas still permeate Air Force doctrinal thinking lends credence to the relevance of Douhet and Mitchell and suggests that with the advance of technology, the strategic "brass ring" draws ever nearer to their eighty-year-old vision. Thus, effects-based operations are not just an idea that emerged from precision weapons and stealth. They represent a manifestation of historic air power theory coupled with the advance of air power technology that seemingly promises the vindication of strategic bombing. What is missing is the view from outside that paradigm--what insights can traditional land warfare theory and doctrine provide in assessing the potential of effects-based operations?

EFFECTS-BASED OPERATIONS AND THE ELEMENTS OF COMBAT POWER

FM 3-0 *Operations* outlines the elements of combat power as firepower, maneuver, leadership, protection, and a recent addition--information.[14] Effects-based operations utilize multiple facets of these elements: information for target location, leadership for execution, stealth for protection, precision engagement for firepower, and airborne maneuver to gain positional advantage. The elements of combat power provide a useful construct in assessing

the components of effects-based operations and insights into its claim to represent a new form of warfare.

INFORMATION, LEADERSHIP AND DECISIONMAKING

Information is key to successful execution of effects-based operations. The proper utilization of precision guided munitions demands virtually perfect target information on the enemy. This "know your enemy" requirement is not entirely far-fetched. Sensors, imagery, and computer technology promise to yield considerable information advantages to U. S. forces over potential adversaries. Sun Tzu would applaud such technological efforts, stating:

> And as water shapes its flow in accordance with the ground, so an army manages its victory in accordance with the situation of the enemy. And as water has no constant form, there are in war no constant conditions. Thus, one able to gain the victory by modifying his tactics in accordance with the enemy situation may be said to be divine.[15]

Indeed, this technological edge could provide a level of information superiority enjoyed by no other force in history, leaving U. S. forces well positioned to execute effects-based operations.

However, despite current advances in technology, Clausewitz would most likely not share this positive perspective. He cynically commented about intelligence in the past, stating:

> Many intelligence reports in war are contradictory; even more are false, and most are uncertain. . . . [O]ne report tallies with another, confirms it, magnifies it, lends it color, till [the commander] has to make a quick decision--which is soon recognized to be mistaken, just as the reports turn out to be lies, exaggerations, errors, and so on. In short, most intelligence is false, and the effect of fear is to multiply lies and inaccuracies. As a rule most men would rather believe bad news than good, and rather tend to exaggerate the bad news. . . . This difficulty of *accurate reflection* constitutes one of the most serious sources of friction in war, by making things appear entirely different from what one had expected.[16] [italics original]

While most modern commanders or military commentators would not share Clausewitz's pessimistic view of intelligence, they would also recognize that it is not a panacea of success. U. S. military forces were unable to stop SCUD launches during the Gulf War, nor could they find and destroy all of Iraq's nuclear and chemical sites.[17] Incomplete intelligence led to the bombing of the Al Firdos bunker in Iraq, and inaccurate intelligence contributed to the bombing of the Chinese embassy in Kosovo.[18] Not much has changed in the last decade. Targeting errors and incorrect information about rival groups in Afghanistan have resulted in a number of attacks on unintended targets and have resulted in friendly casualties.[19] While such incidents do not invalidate the concept of effects-based operations, they suggest that the U. S. military will never achieve perfection in their knowledge of the enemy. Effects-based operations will always

contain a human dimension that will introduce risk and error and ultimately limit advances in technology. Clausewitz would also suggest that in war the enemy reacts, and will no doubt take actions to deceive sensors and imagery or disperse in a manner to mitigate vulnerabilities to acquisition and attack.[20]

By itself, information is only a stream of data, of no value unless acted upon. Leadership is the mechanism that provides the necessary direction, manifested in the commander and his ability to assess information and make decisions. Effects-based operations must follow a similar cycle to properly assess the enemy system, select the vulnerable nodes, and then attack to collapse the enemy's system. However, the information age brings with it additional issues that challenge the decision cycle: dependency on information, potential for massive overload of information, and over-centralization of command. As Michael Handel has argued:

> We now know more, but this makes us more, not less uncertain. In the final analysis, intelligence problems are human--problems of perception, subjectivity, and wishful thinking--and thus are not likely to disappear no matter how much the technological means of intelligence improve. Therefore the suggestion that war since the time of Napoleon and Clausewitz has lost much of its 'friction' is baseless.[21]

Michael Handel concludes:

> Thus while friction and uncertainty continue to exist, their causes and origin have changed with time. Another modern danger is that less-important decisions will be made at higher echelons as political and military leaders attempt to centralize the management of war by removing authority from lower-level commanders on the battlefield. Field commanders will thus become agents inspecting the implementation of orders from the rear, rather than military decision-makers grappling with the dangers and uncertainties of war. Technology has changed the nature of intelligence by eliminating some of the problems while creating others.[22]

Thus, theory and science suggest the necessity for perfect information and rapid decision-making are major weaknesses in the execution and assessment of effects-based operations. While such an approach will do well using precision munitions on known, fixed targets, such attacks are less likely to succeed against dispersed, hidden, mobile, or politically sensitive targets. Effects-based operations depend on human intelligence assets to determine the real effects on the enemy's overarching system and will. If such precision attacks do not produce immediate strategic decision, enemy reactions could circumvent effects. This may explain the unending controversies about the strategic air campaign's effectiveness in World War II and subsequent campaigns.[23] In each of these conflicts, the challenges of assessing battle damage, the enemy's reaction to attack, his resolve to continue, and the impact of strategic

attacks on the enemy's political decisionmaking still elude final resolution. Indeed, accurate intelligence may well be the Achilles heel of all effects-based operations. A thesis presented to the School of Advanced Airpower Studies concluded:

> Due to the fog of real-world operations, complete and perfect intelligence will never exist. Even if perfect knowledge of the physical battlespace did exist, many of the most sought-after effects reside only in the enemy's mind and will never be fully known. We must be ever cognizant that the logical beauty of effects-based theory tends to mask its practical limitations at the higher levels of war.[24]

PROTECTION

Stealth technology as a component of protection is less controversial. Today stealth technology is an asymmetrical advantage that allows certain U. S. aircraft to strike enemies with virtual invincibility. Deptula, in his arguments for changes in force structure, makes the point that despite the increased cost of stealth, the cost per target hit is far less because such aircraft require virtually no supporting aircraft.[25] However, one must remember that the bombers in the age of Douhet were also "stealthy," only to have scientists develop radar. Stealth technology may yet prove not to be invincible.

Protection also applies to the target, and the enemy will take every action possible to inhibit attacks and protect his vulnerable points. This includes historical actions such as camouflage, dispersion and movement, as well as locating critical capabilities among innocent civilians or structures such as churches and hospitals.[26] Nevertheless, the advantages of protection lie with proponents of effects-based operations as stealth at present has no countermeasures, while sensor technology can do much to defeat the traditional protective actions of adversaries.

FIREPOWER

U. S. Army Field Manual 3-0 *Operations* defines firepower as "the destructive force essential to overcoming the enemy's ability and will to fight."[27] In its purest form, firepower is without direction and contributes only the potential attrition of the enemy. Used with other elements of combat power, firepower attrition gains focus and timing to produce a synergistic output far greater than firepower alone. This is central to employment of effects-based operations, as information, stealth, and maneuver are what allow the precision munitions to strike appropriate targets and generate desired synergistic effect. The distinction, however, is not the application of firepower or its relationship with the other elements of combat power. It is the level of war at which that firepower seeks effect. For the advocates of effects-based

operations, it is its ability to immediately strike at the strategic level of war that sets it apart from other concepts of warfare.

Strategic attacks that either bypass, circumvent, or negate ground combat are appealing to political leaders, since such attacks could minimize casualties, expenses, collateral damage, and conflict duration, while still achieving strategic and political objectives. The Air Force defines strategic attack as:

> those operations intended to directly achieve strategic effects by striking at the enemy's [centers of gravity]. These operations are designed to achieve their objectives without first having to necessarily engage the adversary's fielded military forces in extended operations at the operational and tactical levels of war. . . . Strategic attack objectives often include producing effects to demoralize the enemy's leadership, military forces, and population, thus affecting an adversary's capability to continue the conflict.[28]

Strategic attack follows the historic influence of Douhet and Mitchell with its notion that air power can unilaterally attack strategic centers of gravity to meet national objectives. However, history has not been kind to such thinking, as the course of World War II's air campaign might suggest:

> By claiming so much for air power before the war (and after the war as well), airmen created false perceptions that documentary and historical evidence simply does not support. The strategic bombing offensives contributed to Allied victory because they supported and were supported by the efforts of Allied ground and naval forces.[29]

While strategic bombing played a crucial role in Nazi Germany's defeat, a number of pre-war assumptions proved wrong: industrial infrastructure proved resilient, immensely flexible, and adaptable "in the face of incredible hardships and difficulties." Civilian morale was an elusive target, more prone to anger rather than panic or collapse. Regimes--whether democratic or totalitarian--proved adept at providing the necessary stiffening needed to maintain political stability.[30] Five years of strategic bombing over the course of World War II killed hundreds of thousands of German civilians, destroyed entire cities, curtailed industrial output, and crippled transportation nodes, *all with immense effect*. Yet such effects-based operations still failed to render a strategic decision. What can make current analysts so bold as to argue that stealth and precision munitions will render such a decision in a more media-critical environment with arguably more political restrictions on the application of force? Indeed, effects-based operations using stealth and precision munitions may be a quantum leap in efficiency, but the nature of strategic targets have changed little and the likelihood of strategic success based on new weapons seems dubious. There is a fundamental difference between

military efficiency and military effectiveness. However, at the operational level, effects-based operations seems to offer much greater promise.

OPERATIONAL FIRES

Army Field Manual 3-0 defines operational fires as "the operational level commander's application of non-lethal and lethal weapons effects to accomplish objectives during the conduct of a campaign or major operation."[31] Operational fires also need application of the other elements of combat power to increase effects. In the Korean War, this was certainly the case.

> General O. P. Weyland, commander of the U.S. Far East Air Forces, [commented that] the greatest level of effort by the air forces was devoted to interdiction of enemy supplies and reinforcements. Here the lesson of northern Italy in 1944 and 1945 had to be learned all over again: for air interdiction to be effective, the surface forces had to be in control of the tactical initiative.[32]

Current Army doctrine echoes Weyand's point:

> Operational maneuver does not necessarily depend on operational fires. However, operational maneuver is most effective when commanders synchronize it with, and exploit opportunities developed by, operational fires. Combining operational fires with operational maneuver generates asymmetric, enormously destructive, one-sided battles, as the Desert Storm ground offensive showed.[33]

Air Force doctrine agrees that "interdiction and surface-force maneuver can be mutually supporting." Nevertheless, unlike Weyland it leaves room for effects by air power only.[34] This belies the historical lessons that underline the synergistic effects generated by combining operational fires with operational maneuver: Neither is as effective in the absence of the other. In this case, U. S. warfighting doctrine would suggest that inclusion of ground maneuver enhances effects-based operations; and that "parallel war" using air power alone would be less effective than combining those effects with a ground maneuver force. It also insinuates that application of combat power at the strategic and operational levels is somehow different than at the tactical level and that while persuasive, "parallel war" lacks the compelling force of close combat. It begs the question: Why?

TO COMPEL: EFFECTS-BASED OPERATIONS OR CLOSE COMBAT?

Clausewitz defines war as "not merely an act of policy but a true political instrument, a continuation of political intercourse, carried on by other means."[35] He describes war as a true chameleon, a paradoxical trinity composed of the government, the armed forces, and the people--three human forces that continuously interact.[36] To Clausewitz, war is a human endeavor, comparable to commerce as opposed to an art or science.[37] While he recognizes

that political constraints limit the use of force and prevent war from achieving its absolute state,[38] he underlines that war is "an act of force to compel our enemy to do our will." His choice of words is important--*compel* leaves no alternative for the enemy; he must conform to our will. Had he chosen "coerce" or "persuade," he would have left the final decision with the enemy. This is the critical difference between the "control" warfare of effects-based operations and the compelling force of close combat, born of fire and maneuver.

Field Manual 3-0 states that "tactical fires destroy or neutralize enemy forces, suppress enemy fires, and disrupt enemy movement. Tactical fires create the conditions for decisive close combat."[39] It notes that close combat is

> . . . inherent in maneuver and has one purpose--to decide the outcome of battles and engagements. Close Combat is combat carried out with direct fire weapons, supported by indirect fire, air delivered fires, and non-lethal engagement means. *Close combat defeats or destroys enemy forces, or seizes and retains ground.* The range between combatants may vary from several thousand meters to hand-to-hand combat. [emphasis in the original][40]

In essence, close combat is the final arbiter of war. It combines ground maneuver with firepower to render the enemy's reactions ineffective and eventually drives him to defeat. It forces resolution of the political issue on contested terrain in the only possible way: through interpersonal, human to human contact. From the perspective of the U. S. Army,

> Close combat is necessary if the enemy is skilled and resolute; fires alone will neither drive him from his position nor convince him to abandon his cause. Ultimately, the outcome of battles, major operations, and campaigns depends on the ability of Army forces to close with and destroy the enemy.[41]

By virtue of human interaction, continuous presence in close proximity, and certainty of destructive force, close combat *compels* the enemy to our will--leaving him no choice but capitulation. By contrast, effects-based operations and its fires approach is impersonal, fleeting in nature, and from the enemy's eye, indiscriminate. While persuasive, such fires *leave the decision with the enemy*--he may decide to capitulate, or may decide to prolong the conflict to the last man.[42] This does not mean the United States should pursue a "close combat only" approach; it means that strategic policy makers must recognize that it is the essential end to successful warfighting in conjunction *with* strategic attack, *with* operational fires, and *with* tactical fires. The assertion that effects-based operations and "control warfare" have ushered in a new era in warfare defies history, theory, and misreads the changes technology offers. Some within the Air Force community agree, as a recent article in the *Airpower Journal* concluded:

> U. S. Air Force aerospace-power doctrine should be more coercively oriented than idealistically decisive. Coercive airpower is the most likely reality in future

> wars (outside nuclear conflict). . . . Current aerospace-power doctrine is a two-edged sword. One edge utilizes doctrine as a marketing tool to compete in the joint service arena for future military programs, while the other edge attempts to guide airmen in sound warfighting principles. The challenge is to minimize the marketing utility of doctrine and maximize the operational relevance to the warfighter.[43]

Thus, while air power is alluring because it does not require American soldiers on the ground, by itself it lacks the compelling force that ensures decision in conflict. Those who advocate strategic attack for future wars will bear the same burden as their predecessors: video effects that titillate the media but are painfully unable to produce strategic decisions without a dominant ground maneuver component. The greatest lesson is not the emergence of effects-based operations to vindicate strategic attack and control as a "new form of warfare," but the vast power of orchestrated joint operations utilizing the combat power of all the services. Indeed, by cloaking strategic attack under the mantel of effects-based operations, air power purists do a disservice to a more joint-oriented mainstream Air Force.[44] Yet, if the technological advances of stealth, sensors, and precision munitions are not by themselves decisive, are there implications for the essence of dominant maneuver?

DECISIVE AND COERCIVE POWER: A MODEL

Dividing the use of military power into component parts of compelling and coercive force provides a model to illustrate the use of such forces in war. The model begins with compelling and coercive forces in being. A conflict arises, requiring the use of force. A decision cycle must assess the nature of the conflict and determines how to apply both coercive and compelling force. During the conflict, a reassessment process redirects the use of force enroute to meeting policy objectives. Figure 1 illustrates this point. Early in the conflict, coercive force dominates the application of power. It sets the conditions for the use of compelling force. It also offers the adversary an opportunity to capitulate, should this coercive use of force persuade him that defeat is inevitable. If the adversary refuses to surrender, continuous reassessments must adjust the use of force, shifting emphasis to compelling force, ultimately imposing policy and strategic objectives on the enemy.

One can extend the model to substitute fires such as air power and fire support for coercive force and ground maneuver that uses physical presence and direct fire weapons as compelling force to complete a mental picture of warfare. This gives a more tangible application to the model and allows for detailed analysis of the relationship between fires--a coercive force, and maneuver--a compelling force. It ultimately identifies the true impact of stealth, sensors,

and precision munitions on dominant maneuver, outside the paradigm of effects-based operations.

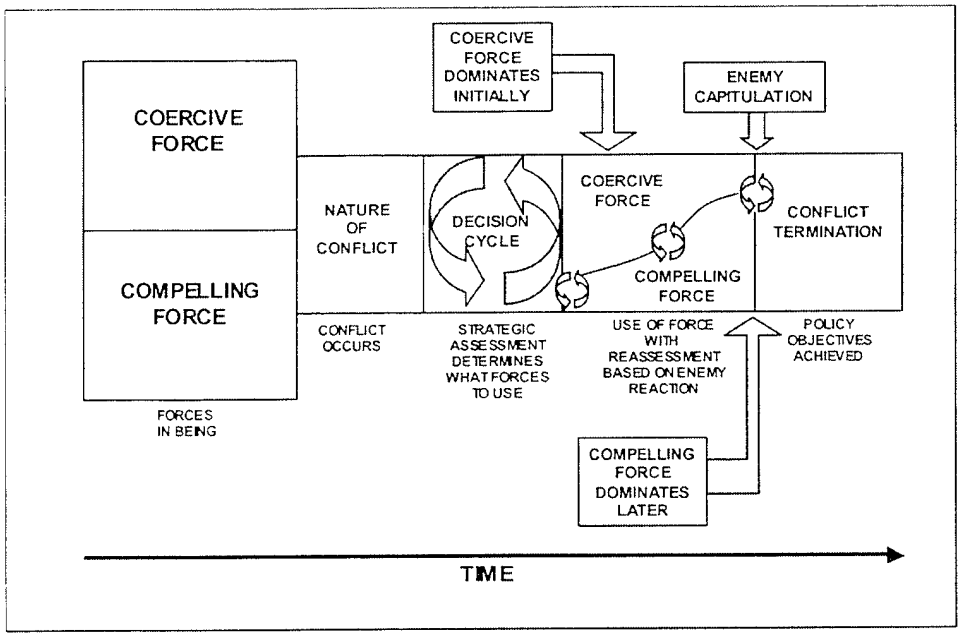


FIGURE 1

STEALTH, PRECISION AND INFORMATION ENTER THE EMPTY BATTLEFIELD

That the concept of effects-based operations and control warfare has emerged from the stealth and precision of air power misreads an age-old trend of ever increasing lethality in *all* aspects of warfare--a trend that has affected combatants since the beginning of time. While U. S. military forces have achieved technological leaps in stealth, sensors, and precision munitions, ground warfare has also become more lethal with its own precision munitions, non-line of sight weapons, forward-looking infrared radar and thermal imaging, and ever increasing ranges for weapons. Through it all warfare has not changed, but it is just the same *ever-changing*. It is here that Clausewitz likened war to a duel; and he reminds us that war "is not the action of a living force upon a lifeless mass" but the "collision of two living forces" that interact.[45]

Indeed, warfare continues to become more and more lethal and man *responds* to that lethality. Lethality, be it an air-launched cruise missile or a Javelin anti-tank weapon, has produced reactions such as the "empty battlefield"[46] and strategies such as Mao's "protracted war."[47] Effects-based operations misread this trend in lethality, as if enemies will not be able to react to the use stealth and precision weapons. Indeed, they will react--and much as the U. S. military would wish for enemies like Iraq, such wishful thinking is just what the next "Ho Chi

Minh" is hoping for. But it is in this reaction that we can envision the impact of precision fires on dominant ground maneuver.

PRECISION FIRES AND THEIR IMPACT ON DOMINANT MANEUVER

As part of the increasing trend in weapons lethality, precision fires have potential for significant changes in the employment of maneuver forces. Because these munitions offer greater destructive effects on the enemy prior to maneuver contact, they have potential for early exploitation and less emphasis on attrition for maneuver forces. This, in turn, would also allow for lighter, more dispersed maneuver forces that could cover increased portions of the battlespace. It would require a new tactical mindset--increased fighting in depth with a clear emphasis on engagements out of contact. This match of precision engagement with dominant maneuver will have significant implications for Army objective force development and operations. It suggests that lighter, more deployable forces fighting on a dispersed battlefield with precision weapons can be lethal, survivable, and effective.[48]

The larger the lethality gap with the opponent, the greater the opportunity for precision engagement to enable exploitation operations instead of traditional forms of maneuver. This will be particularly true when U. S. forces are fighting industrial age mechanized forces. But it will be less true at the low end of conflict spectrum in guerrilla wars with few, if any, targets suitable for precision munitions. Full spectrum operations demand flexible forces capable of fighting many potential foes. Indeed, the likelihood of low intensity operations becomes ever greater, given the vulnerabilities of industrial age mechanized forces to precision engagement and dominant maneuver. Thus, as the Army transitions to the objective force, it must maintain a full spectrum capability and not rely upon precision fires as a panacea. To that end, there is another version of effects-based operations, one that looks beyond precision weapons and stealth and instead focuses on decision cycles at the tactical, operational and strategic levels of war.

FROM FAITH-BASED OPERATIONS TO EFFECTS-BASED OPERATIONS

> We shall always win by reason of pluck: and, if it is not the only cause of victory, it is always the most essential factor and the one without which we cannot hope to succeed.[49]
>
> —Sir Douglas Haig

Haig's argument speaks volumes about the mindset that resulted in the bloodbath of World War I. Despite overwhelming evidence that defensive firepower would dominate the next

battlefield, the British fixated on the élan or "pluck" of the offense. Clinging to this notion gave rise to extraordinary casualty rates for gains of mere yards of terrain, as generals failed to adapt to the lethality of the modern battlefield.[50] Yet faith-based operations, such as these, typify military units entering combat. Military leaders combine their experience, doctrine, history, and wargames to develop "rules" to guide operations. They combine these rules with assumptions regarding the enemy, environment, and themselves to produce a plan of action.[51] These plans may equate to Haig's "pluck-based" operations--unfortunate plans that might be successful, but without adaptation, produce excessive costs. One does not have to look far for other examples of faith-based operations. Bomber Command and the Eighth Air Force in World War II clung to their peculiar strategic bombing theories that "the bombers would always get through" despite crippling losses from German Luftwaffe.[52] Likewise, the United States fought ten years of attrition warfare in Vietnam against an enemy whose will to fight and his tenacity to stay the course ultimately prevailed despite enormous disadvantages in every measurable element of national power.[53] Of greater importance, the United States may well be *unavoidably* building the foundations for new, but similar faith-based operations today, awaiting the crucible of war for resolution. What, then is the solution? A new variant of effects-based operations from the Joint Advanced Warfighting Program at the Institute for Defense Analysis provides a wholly new and different perspective on effects-based operations with implications for all services.

ADAPTING FROM FAITH-BASED OPERATIONS

Historically, successful commanders have always transcended faith-based operations by understanding the enemy and his intentions through a process of analyzing, assessing, adapting their force, and by executing based upon effects and reality rather than hope and belief.[54] It is here that the Institute for Defense Analysis has advanced the concept of effects-based operations into the realm of strategic and operational decision making. Its concept seeks to utilize effects-based thinking to filter the vast amounts of information provided by sensors into decision superiority to produce decisive effects in combat. This strategic and operational version of effects-based operations is not tied to stealth and precision munitions capabilities, but provides a theoretical foundation to maximize new and future information technologies. It seeks to alter an enemy's actions by affecting his capabilities and decision making while avoiding undesired effects and mitigating or exploiting unexpected effects.[55] It does not claim to lift the fog of war,[56] but may serve to improve information management challenges by focusing sensors on specific areas to match decisions, much like current Army doctrine posits the Commander's

Critical Information Requirements. It also highlights two long-standing tenets of Army operations: agility and initiative.

Field Manual 3-0 defines agility as "the ability to move and adjust quickly and easily." It further states that "agility is not merely physical; it requires conceptual sophistication and intellectual flexibility. . . . Agile commanders quickly comprehend unfamiliar situations, creatively apply doctrine, and make timely decisions."[57] This is the essence of the version of effects-based operations developed by the Institute for Defense Analysis. It emphasizes the use of intellectual adaptability to comprehend what has changed in warfare, adjust to new realities, and reenter battle with new methodologies to generate greater positive effects. Like agility, this version of effects-based operations keys on the ability to react to opportunity, make decisions more rapidly, and exploit opportunities. However, its nature is generally reactive. Coupled with initiative, it is proactive--the greatest challenge for effects-based operations.

By its nature, an effects-based operation is an analytical form of warfare--it anticipates events and enemy reactions, then acts, assesses, and acts again. It is analogous to a chess match; methodical and deliberate--a contest of action and reaction. Like the grand master, those who conduct effects-based operations must strive to see many moves into the future, anticipating the enemy and setting conditions for friendly forces. However, such a concept becomes increasingly more difficult to implement as one moves through the levels of war from the strategic, to the operational, and finally to the tactical level. At the tactical level, war more closely resembles a boxing match than a game of chess. The boxer strives to deliver a rapid series of blows to weaken, then knock out his adversary, all while avoiding or absorbing the blows of his opponent. There is some respite between rounds, but the boxer must adapt to an environment of blood, sweat, pain, and exhaustion--an atmosphere that does not forgive faith-based operations, but one that requires clear doctrine and established tactics, techniques and procedures. When the bell sounds, the boxer must take advantage of fleeting opportunities or the effects of his punches diminish. He must rely on instinct, intuition, and training as much as analysis and adaptation. Only such an approach allows him to retain the initiative, a tenet Field Manual 3-0 defines as follows:

> *Initiative is setting or dictating the terms of action throughout the battle or operation.* Initiative implies an offensive spirit in all operations. To set the terms of battle, commanders eliminate or reduce the number of enemy options. They compel the enemy to conform to friendly operational purposes and tempo, while retaining freedom of action . . . . In the offense, initiative involves throwing the enemy off balance with powerful, unexpected strikes. It implies never allowing the enemy to recover from the initial shock of an attack. To do this, commanders mass the effects of combat power and execute with speed, audacity, and violence. They continually seek vulnerable spots and shift their decisive

> operation when opportunities occur. To retain the initiative, leaders press the fight tenaciously and aggressively. They accept risk and push soldiers and systems to their limits. Retaining the initiative requires planning beyond the initial operation and anticipating possible events. The higher the echelon, the more possibilities the commander must anticipate and the further in advance the staff must plan.[58]

It would seem that initiative and effects-based operations create an operational paradox: one utilizes instinct and intuition to seize opportunity, while the other applies intellectual analysis and reassessment in a more cautious and efficient application of power. Indeed, effects-based operations can diminish initiative in favor of more careful analysis, more of a surgical approach than Clausewitz's blunt instrument. While well intentioned, they may serve to paralyze operations in a search of intellectual perfection to the detriment of good enough. Likewise, ingrained instincts, intuitions, and training born of flawed pre-war practices can lead to deadly initiatives at the hands of an adaptive enemy. In the final analysis, initiative and effects-based thinking are not incompatible--effects-based thinking can assist determining the best actions to maximize effects on the enemy and minimize collateral effects that detract from desired outcomes. But the environments of effects-based thinking are considerably different at the tactical and strategic levels of war.

EFFECTS-BASED TACTICS: WHERE BATTLES ARE WON

The military historian Michael Doubler outlined in his works the innovative actions of the U. S. Army to improve its operations in North Africa and Europe during World War II. These include how tactical elements adapted to the challenges of hedgerow country, air-ground integration, urban fighting, river crossings, the Hűrtgen Forest, and defense actions during the German Ardennes offensive. Doubler notes:

> Commanders learned to apply doctrine flexibly or to ignore it altogether, as they sought ways to defeat a tenacious enemy defending from inhospitable terrain and employing unique tactics. Combat revealed a number of shortcomings in organization and capabilities. Americans implemented an unusual variety of tactical and technical innovations, and commanders altered both branch-specific combat techniques and combined arms tactics to overcome different types of enemy defenses under varying conditions of weather and terrain.[59]

In each case, innovation came from identification of a problem, reassessment of doctrine, experimentation with various ideas, disseminating what worked, and training in the new technique. Sergeant Curtis Culin's "rhinoceros" hedgerow cutter coupled with the 29th Division's hedgerow tactics in the Normandy breakout is one such example.[60] Thinking about tactical level effects and innovation requires time and experimentation to develop. Rarely is it

the product of fragmentary orders or the commander's initiative in combat, but can clearly result from the pressures of war. It can be a deliberate or informal process that solicits solutions from all quarters to deal with near term objectives and then allocates resources to accomplish the mission. It requires positive and open command climates in tactical units to encourage innovative thinking from soldiers and junior leaders--not autocratic leadership styles that engender fear and inhibit initiative. Tactical success will not be a product of catchy rhetoric or claims to being "effects-based," but only the product of flexible doctrine, hard training, and practiced battle drills.

CONCLUSION: THE END OF DOMINANT MANEUVER?

There are many versions of effects-based operations--a dangerous proposition when leaders agree to a concept that has several different methodologies. As Joint Forces Command develops the conceptual basis for effects-based operations, its analysts would perform a great service to the joint community by defining the parameters of effects-based operations and its associated relevance to each level of war. To that end, Joint Forces Command should consider the three aspects of effects-based operations discussed in this paper.

First, attempts to vindicate Guilio Douhet and strategic bombing under the mantel of strategic attack, effects-based operations, and control warfare have little basis in experience and represent a risky proposition upon which to base national defense. This version of effects-based operations may be an effective strategy for air power procurement, but is the antithesis of joint warfighting. Above all, it discounts the considerable synergies that joint forces can generate. Indeed, such thinking taints the term "effects-based operations" to such an extent that Joint Forces Command will face considerable resistance to their work based on the origins of the concept, not the final quality of the product.

Second, effects-based targeting as part of strategic attack and operational fires *in conjunction with* dominant ground maneuver shows more promise. It has historical precedents and can match those precedents with more efficient and effective precision engagement. The use of *Centers of Gravity and Critical Vulnerabilities* by Dr. Joe Strange would be an excellent theoretical foundation upon which to develop such a construct. Such a methodology using center of gravity, critical capabilities, critical requirements, and critical vulnerabilities, would provide direction to effects-based strategic and operational targeting.[61] It would allow such attacks to set the conditions for exploitation-focused dominant ground maneuver.

Finally, effects-based thinking does have meaningful insights to offer ground operations. Such a conceptual approach provides a means to transcend faith-based operations. It forms a

useful paradigm for leadership, professional schooling, wargaming, and experimentation. But it is at the same time a dangerous concept to promote at the tactical level. The analytical nature of effects-based operations makes it foreign to tactics where battle drills, standard operating procedures, and hard training are more important to success. Indeed, the use of "effects-based" terminology within tactical doctrine is most likely a smoke screen for no doctrine, tactics, techniques, or procedures.[62] Such a clean slate approach at the tactical level would likely cause extreme friction in execution and lead to battlefield disaster.

The many faces of effects-based operations make it a difficult concept to understand. As well, the proliferation of "effects-based" terminology into doctrinal products without regard to a defining construct makes it even more problematic, if not dangerous. However, there is one conclusion that is constant for every version of the concept: effects-based operations will not end the requirement for dominant ground maneuver. As T. R. Feherenbach said, "If free nations want a certain kind of world, they will have to fight for it with courage, money, diplomacy--and legions."[63] Like the Romans, it will be the legions of dominant ground maneuver that compel the enemy in war.

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ENDNOTES

[1] Eliot A. Cohen, Revolution in Warfare? Air Power in the Persian Gulf (Annapolis MD: Naval Institute Press, 1995), 213.

[2] Williamson Murray, et al., An Historical Perspective on Effects-Based Operations Draft Working Paper, Joint Advanced Warfighting Program, (Alexandria, VA: Institute for Defense Analysis, July 2001), 5.

[3] United States Joint Forces Command J-9 Concepts Department, Effects-Based Operations White Paper Version 1.0 (Norfolk, VA: Joint Forces Command, 18 October 2001), ii.

[4] John A. Warden III, "The Enemy as a System," Airpower Journal (Spring 1995): 54.

[5] David A. Deptula, Effects-Based Operations: Change in the Nature of Warfare (Arlington, VA: Aerospace Education Foundation, 2001), 18.

[6] Ibid., 19.

[7] Ibid., 23-26.

[8] The reference to the Army's "visceral hatred" of effects-based operations was a remark made by a speaker participating in the Commandant's Lecture Series.

[9] Carl von Clausewitz, On War, trans. and ed. Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1976), 75.

[10] Ibid., 141-142.

[11] David MacIsaac, "Voices from the Central Blue: Air Power Theorists." In Peter Paret, ed., Makers of Modern Strategy, (Princeton, NJ: Princeton University Press, 1986), 630.

[12] Ibid., 631.

[13] Department of the Air Force, Air Force Basic Doctrine, Air Force Doctrine Document 1, (Washington, D.C.: U.S. Department of the Air Force, September 1997), 51, 54. Referred to hereafter as AFDD 1.

[14] Department of the Army, Operations, Field Manual 3-0 (Washington, D.C.: U. S. Department of the Army, 14 June 2001), 4-3 - 4-11. Referred hereafter as FM 3-0.

[15] Sun Tzu, The Art of War, trans. Samuel B. Griffith (New York, NY: Oxford University Press, 1963), 101.

[16] Clausewitz, 117.

[17] Cohen, Revolution in Warfare? Air Power in the Persian Gulf, 66-78; 119.

[18] For details concerning bombing of the Al Firdos bunker see Gulf War Air Power Survey, vol II, (Washington, D.C.: Department of the Air Force, 1993), 89. For details concerning

bombing of the Chinese Embassy in Kosovo, see Wesley K. Clark, Waging Modern War, (New York: Public Affairs, 2001), 296-297.

[19] Larry Kaplow, Don Melvin, "A tricky time in Afghanistan U. S. accused of bombing convoy of friendly leaders." Atlanta Constitution, 22 December 2001 [database on-line]; available from UMI Pro Quest, Bell & Howell. Accessed 10 February 2002. See also Paul Richter, "RESPONSE TO TERROR; THE AFGHANISTAN CONFLICT; 'Friendly Fire' still a Factor in Battles; Weapons: Despite better bombing precision and battlefield identification, military officials say, inadvertent casualties are difficult to avoid." The Los Angeles Times, 6 December 2001 [database on-line]; available from UMI Pro Quest, Bell & Howell. Accessed 10 February 2002.

[20] Clausewitz, 77.

[21] Michael I. Handel, Clausewitz and Modern Strategy (Ilford, Exxes, England: Frank Cass Publishers, 1986), 69.

[22] Ibid., 70.

[23] Robert A. Pape, Bombing to Win, (Ithaca, NY: Cornell University Press, 1996), 314-331. Pape provides a historical assessment of various air campaigns. His conclusions about the viability of strategic attack are discussed in the pages above. Pape asserts that air power is coercive, not decisive, as an element of military power.

[24] T. W. Beagle, Effects-Based Targeting: Another Empty Promise?, Thesis (Maxwell Air Force Base: School of Advanced Airpower Studies, June 2000), 110.

[25] David A. Deptula, "Effects-Based Operations: Change in the Nature of Warfare." 23 April 2001, video webcast available from <http://www.connectlive.com/events/afa/>; Internet. Accessed 11 December 2001.

[26] Robert H. Scales, Firepower in Limited War, (Novato, CA: Presidio Press, 1995), 235-238. Scales describes the actions of an Iraqi field artillery firing battery that eluded destruction by air power by burning tires, only to have U. S. counterfire destroy his battery after its first mission.

[27] FM 3-0, 4-6.

[28] AFDD 1, 51.

[29] Williamson Murray, "Reflections on the Combined Bomber Offensive." Militargeschichtliche Mitteillungen 51 (1992 Heft 1): 92.

[30] Ibid., 93.

[31] FM 3-0, 4-6.

[32] MacIsaac, 643.

[33] FM 3-0, 4-6 - 4-7.

[34] AFDD 1, 49.

[35] Clausewitz, 87.

[36] Clausewitz, 89.

[37] Clausewitz, 149.

[38] Clausewitz, 602-604.

[39] FM 3-0, 4-7.

[40] FM 3-0, 4-5.

[41] FM 3-0, 4-6.

[42] The reference to leaving the decision with the enemy was in reference to the non-use of ground forces during NATO operations in Kosovo as part of remarks in a USAWC briefing. The leader contended that the single issue that prolonged the conflict was the absence of a viable ground threat, thereby leaving the decision to end the conflict with Slobodan Milosevic.

[43] Paul C. Strickland, "USAF Aerospace Power Doctrine Decisive or Coercive?" Airpower Journal Online Fall 2000; available from <http://www.airpower.maxwell.af.mil/airchronicles/apj/apj00/fal00strickland.htm>; Internet; accessed 11 January 2002.

[44] This idea reflects remarks made by a speaker in the Commandant's Lecture Series. The remarks noted those that advocates of air power as a unilateral force do not reflect the main stream US Air Force perspective.

[45] Clausewitz p. 75, 77.

[46] James J. Schneider, "The Theory of the Empty Battlefield," Journal of the Royal United Service Institution, September 1987, 37-44.

[47] Mao Tse-Tung, Selected Military Writings of Mao Tse-Tung, (Peking China: Foreign Languages Press, 1967), 211-214.

[48] Coupling small maneuver forces with precision weapons is the subject of much study in current operations in Afghanistan. Use of special operations forces in conjunction with indigenous forces and air power (both precision and conventional weapons) has thus far been tactically successful. However, one must take great care in drawing general lessons from a single conflict—particularly one that has not run its course. But it seems logical to conclude that when one force has a significant lethality advantage over an adversary, it would be able to have greater effect with smaller forces.

[49] Tim Travers, The Killing Ground, (London: Allen & Unwin, 1987), 89.

[50] CS Forrester, The General, (Annapolis, MD: Nautical and Aviation Publishing Co., 1947).

[51] Gwen Linde, et al., New Perspectives on Effects-Based Operations: Annotated Briefing, Joint Advanced Warfighting Program, (Alexandria, VA: Institute for Defense Analysis, June 2001), 16.

[52] Murray, An Historical Perspective on Effects-Based Operations, 32-48.

[53] Andrew Krepinevich, The Army in Vietnam, (Baltimore, MD: John Hopkins Press, 1986), 258-260. See also Harry Summers, On Strategy, (Novato, CA: Presidio Press, 1982), 83-91.

[54] Linde, 17-18.

[55] Linde, 18.

[56] Linde, 14

[57] FM 3-0, 4-16 - 4-17.

[58] FM 3-0, 4-15.

[59] Michael D. Doubler, Closing with the Enemy, (Lawrence, KS: University Press of Kansas, 1994), 5.

[60] Ibid, 45-50.

[61] Joe Strange, Centers of Gravity & Critical Vulnerabilities, 2nd ed. (Quantico, VA: Marine Corps University, 1996) 43.

[62] "Fires and Effects," Chapter 8, IBCT Organizational and Operational Concept, 31 July 2000, 1; available from <http://www.lewis.army.mil/transformation/O&O%20brief/8.pdf>; Internet; accessed 13 February 2002.

[63] T. R. Feherenbach, This Kind of War: A Study in Unpreparedness, (New York, NY: Macmillan, 1963) 659.

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